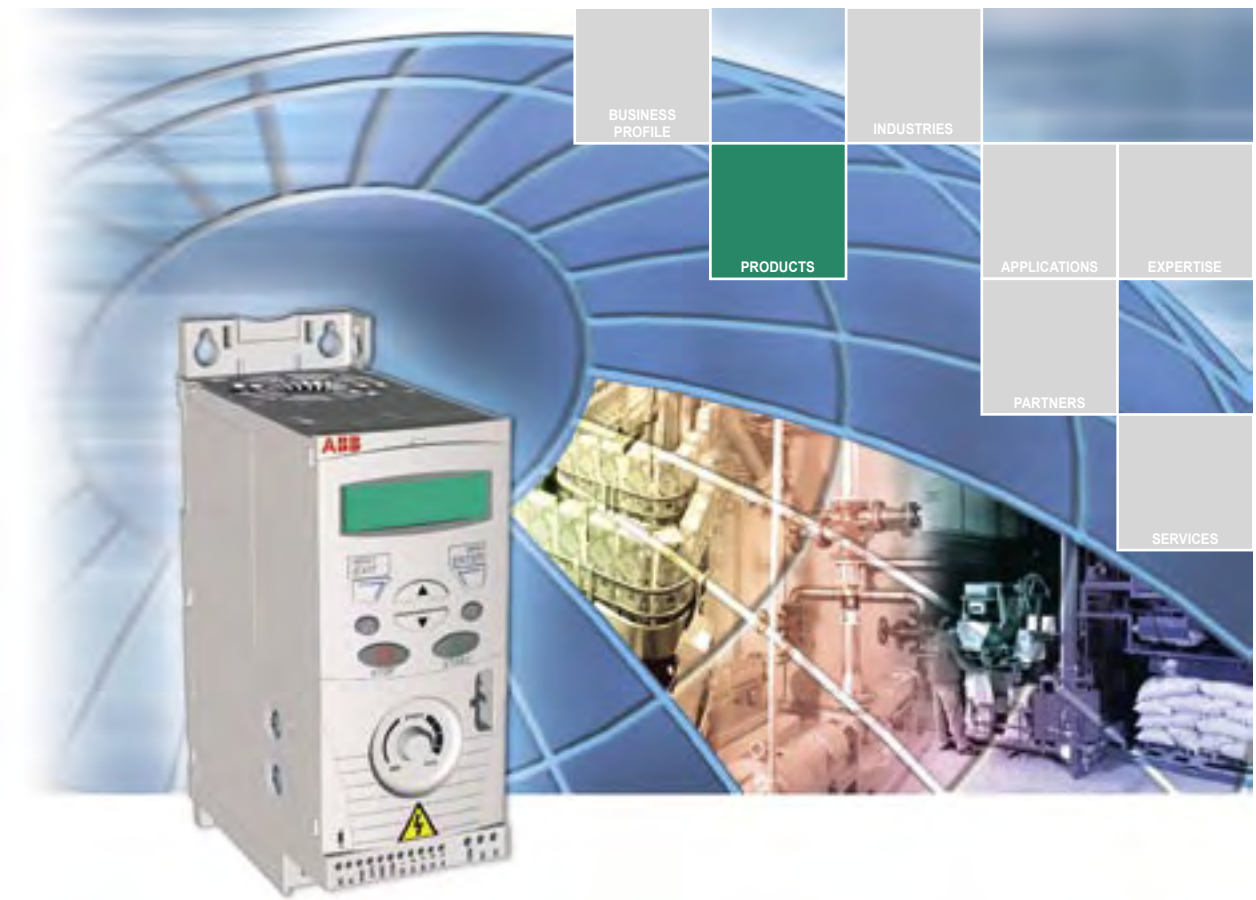
ABB component drives

ACS150, 0.5 to 5 hp

Technical catalog



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Contents

Choice 1: Simply contact your local ABB drives sales office and let them know what you want. Use page 4 as a reference section for more information.

OR

Choice 2: Build up your own ordering code using the simple 7-step approach below. Then, contact your local ABB Drives sales office.

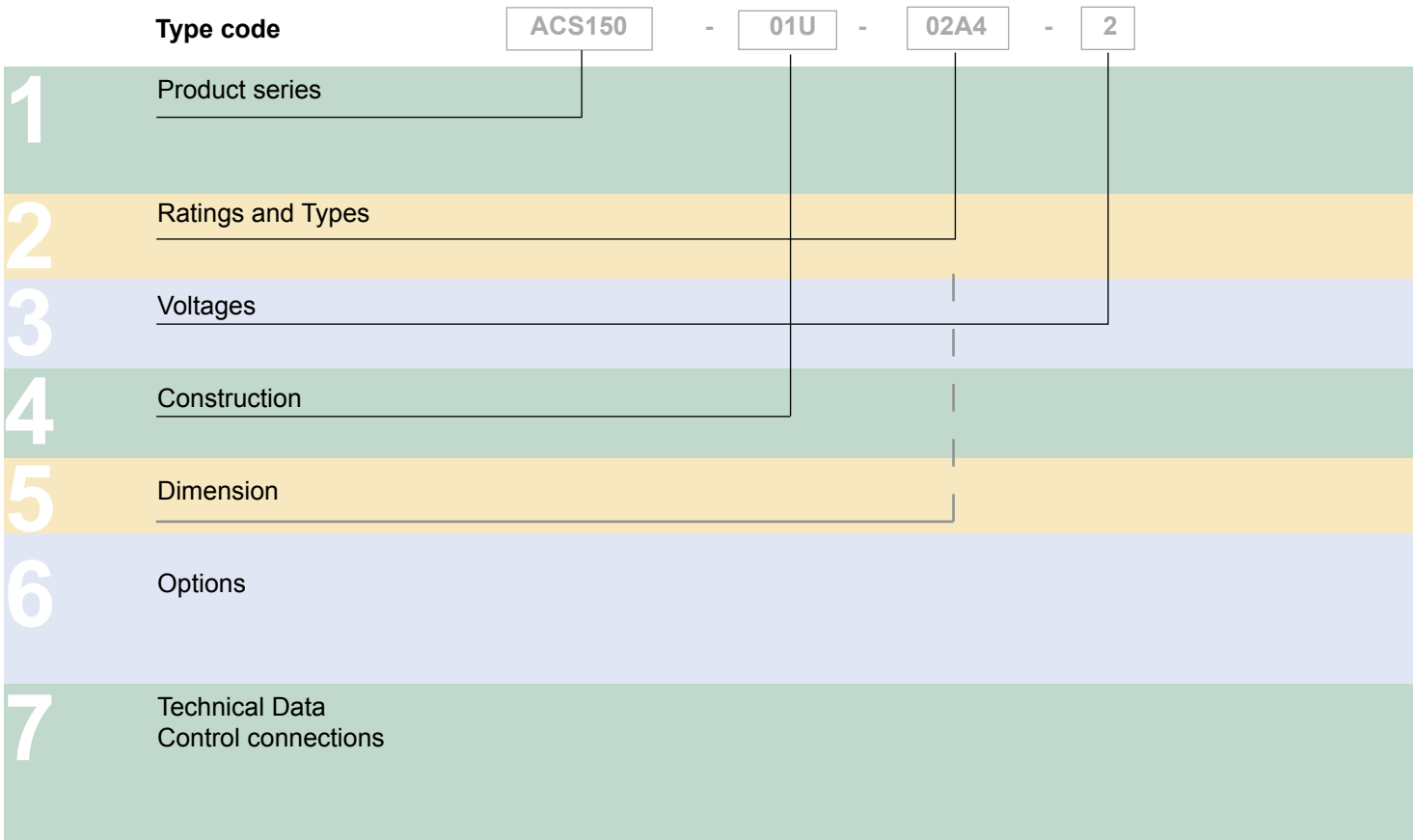

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ABB component drive, ACS150

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ABB component drives

ACS150 - 01U - 02A4 - 2

What is an ACS150 component drive?

The ABB component drives meet the requirements of OEMs, system integrators and panel builders. It is a component that is bought together with other components. The drive is stocked, and the number of options and variants are optimized for distribution.

Where can it be used?

ABB component drives are designed to meet the requirements of an extensive range of machinery applications. The drive is ideal for food and beverage, material handling, textile, printing, rubber and plastics and woodworking applications

Highlights

- FlashDrop- easy to set and select parameters
- Integral operator interface - clear display with buttons
- Integral potentiometer for frequency setting
- Integrated EMC filter for 2nd environment
- Built-in brake chopper as standard
- Coated boards as standard
- Unified height and depth

Features	Benefits	Notes
FlashDrop	Easy and time-saving. Cost-saving for machine builders.	Fast and trouble free parameter set up without power.
Fixed interface	Integrated non-removable control panel. Clear LCD display with backlight and buttons.	Simple to use
Fixed potentiometer	Integrated potentiometer. Settings shown on the control panel	Easy speed setting.
Built-in EMC filter	No extra space, parts, time and cost required	2nd environment built in filter complying with IEC61800-3 as standard
Built-in brake chopper	Reduced cost. Gives freedom to choose the resistor supplier.	100% braking capability.
Flexible installation	All units fit in the same sized cabinet	Unified height and depth for all frame sizes for optimal use of cabinet space. Sideways, side by side and DIN-rail mounting configuration
Coated boards	Longer lifetime in hostile environments. Reduced service.	Protection against moisture and hostile particles as standard

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Technical specification

ACS150 - 01U - 02A4 - 2

Input connection

Voltage and power range	1-phase, 200 to 240 V ±10% 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 200 to 240 V ±10% 0.37 to 2.2 kW (0.5 to 3 hp) 3-phase, 380 to 480 V ±10% 0.37 to 4 kW (0.5 to 5 hp)
Frequency	48 to 63 Hz
Power factor	0.98

Output connection

Voltage	3-phase, from 0 to U_{supply}
Frequency	0 to 500 Hz
Continuous loading capability (constant torque at a max. ambient temperature 40°C)	Rated output current I_{2N}
Overload capability (at a max. ambient temperature of 40°C)	1.5 x I_{2N} for 1 minute every 10 minutes 1.8 x I_{2N} for 2 s every 10 minutes
Switching frequency	
Default	4 kHz
Selectable	4 to 12 kHz with 4 kHz steps
Acceleration time	0.1 to 1800 s
Deceleration time	0.1 to 1800 s
Braking	brake chopper standard (100% braking capability)

Environmental limits

Ambient temperature	-10 to 40°C (14 to 104°F), no frost allowed, 50°C (122°F) with 10% derating
Altitude	
Output current	Rated current available at 0 to 1000 m (0 to 3281 ft) reduced by 1% per 100 m (328 ft) over 1000 to 2000 m (3281 to 6562 ft)
Relative humidity	Lower than 95% (without condensation)
Protection class	IP 20 / Protected Chassis
Enclosure color	NCS 1502-Y, RAL 9002, PMS 420 C
Contamination levels	IEC721-3-3 No conductive dust allowed
Transportation	Class 1C2 (chemical gases) Class 1S2 (solid particles)
Storage	Class 2C2 (chemical gases) Class 2S2 (solid particles)
Operation	Class 3C2 (chemical gases) Class 3S2 (solid particles)

Programmable control connections

One analog input	
Voltage signal	0 (2) to 10 V, R_{in} > 312 kΩ
Current signal	0 (4) to 20 mA, R_{in} = 100 Ω
Resolution	0.1 %
Accuracy	±1%
Auxiliary voltage	24 V DC ±10%, max. 200 mA
Five digital inputs	12 to 24 V DC with internal or external supply, PNP and NPN, pulse train 0 to 16 kHz.
Input impedance	2.4 kΩ
One relay output	
Type	NO + NC
Maximum switching voltage	250 V AC/30 V DC
Maximum switching current	0.5 A/30 V DC; 5 A/230 V AC
Maximum continuous current	2 A rms

Product compliance

Low voltage Directive 73/23/EEC with supplements
Machinery Directive 98/37/EC
EMC Directive 89/336/EEC with supplements
Quality assurance system ISO 9001
Environmental system ISO 14001
UL, cUL, and CE approvals

EMC (according to EN61800-3)

2nd environment filter, unrestricted distribution with 30 m (98 ft) cable, built-in as standard.

Ratings, types, voltages and construction

ACS150	-	01U	-	02A4	-	2

Type code

This is a unique reference number that clearly identifies the drive by power rating, voltage, and construction. Once you have selected the type code, the frame size can be used to determine the drives dimensions, shown below.

Voltages

The ACS150 is available in two voltage ranges:
2 = 200 - 240 V
4 = 380 - 480 V

Construction

"01U" and "03U" within the type code indicates the number of phases for power.

01 = 1-phase (200 - 240V only)
03 = 3-phase (200 - 240V and 380 - 480V)
U = EMC filter disconnected, 60 Hz frequency
(In case the filter is required it can easily be connected.)

Ratings			Type code	Frame size
P_N hp	P_N kW	I_{2N} A		
	1-phase supply voltage 200 - 240 V units			
0.5	0.37	2.4	ACS150-01U-02A4-2	R0
1	0.75	4.7	ACS150-01U-04A7-2	R1
1.5	1.1	6.7	ACS150-01U-06A7-2	R1
2	1.5	7.5	ACS150-01U-07A5-2	R2
3	2.2	9.8	ACS150-01U-09A8-2	R2
	3-phase supply voltage 200 - 240 V units			
0.5	0.37	2.4	ACS150-03U-02A4-2	R0
0.75	0.55	3.5	ACS150-03U-03A5-2	R0
1	0.75	4.7	ACS150-03U-04A7-2	R1
1.5	1.1	6.7	ASC150-03U-06A7-2	R1
2	1.5	7.5	ACS150-03U-07A5-2	R1
3	2.2	9.8	ACS150-03U-09A8-2	R2
	3-phase supply voltage 380 - 480 V units			
0.5	0.37	1.2	ACS150-03U-01A2-4	R0
0.75	0.55	1.9	ACS150-03U-01A9-4	R0
1	0.75	2.4	ACS150-03U-02A4-4	R0
1.5	1.1	3.3	ACS150-03U-03A3-4	R1
2	1.5	4.1	ACS150-03U-04A1-4	R1
3	2.2	5.6	ACS150-03U-05A6-4	R1
5	4	8.8	ACS150-03U-08A8-4	R1

Dimensions, Weight and Noise

Frame size	Dimensions and weights IP 20 (cabinet) / UL open												Noise
	H1		H2		H3		W		D		Weight		Noise level
	mm	in	mm	in	mm	in	mm	in	mm	in	kg	lb	dBA
R0	169	6.65	202	7.95	239	9.41	70	2.76	142	5.59	1.1	2.4	50
R1	169	6.65	202	7.95	239	9.41	70	2.76	142	5.59	1.3/1.2[1)]	2.9/2.6[1)]	60
R2	169	6.65	202	7.95	239	9.41	105	4.13	142	5.59	1.5	3.3	60

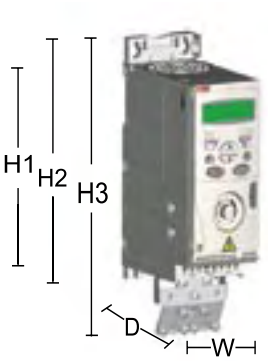
[1)] U_N=200...240 V: 1.3 kg / 2.9 lb, U_N=380...480 V: 1.2 kg / 2.6 lb

Frame size	Dimensions and weights IP21 / NEMA 1										Noise
	H4		H5		W		D		Weight		Noise level
	mm	in	mm	in	mm	in	mm	in	kg	lb	dBA
R0	257	10.12	280	11.02	70	2.76	142	5.59	1.5	3.3	50
R1	257	10.12	280	11.02	70	2.76	142	5.59	1.7/1.6[2)]	3.7/3.5[2)]	60
R2	257	10.12	282	11.10	105	4.13	142	5.59	1.9	4.2	60

[2)] U_N=200...240 V: 1.7 kg / 3.7 lb, U_N=380...480 V: 1.6kg / 3.5 lb

NOTES:
H1 = Height without fastenings and clamping plate.
H2 = Height with fastenings but without clamping plate.
H3 = Height with fastenings and clamping plate.
H4 = Height with fastenings and NEMA 1 connection box.
H5 = Height with fastenings, NEMA 1 connection box and hood.

Cabinet-mounted drives (UL open)



Wall-mounted drives (NEMA 1)

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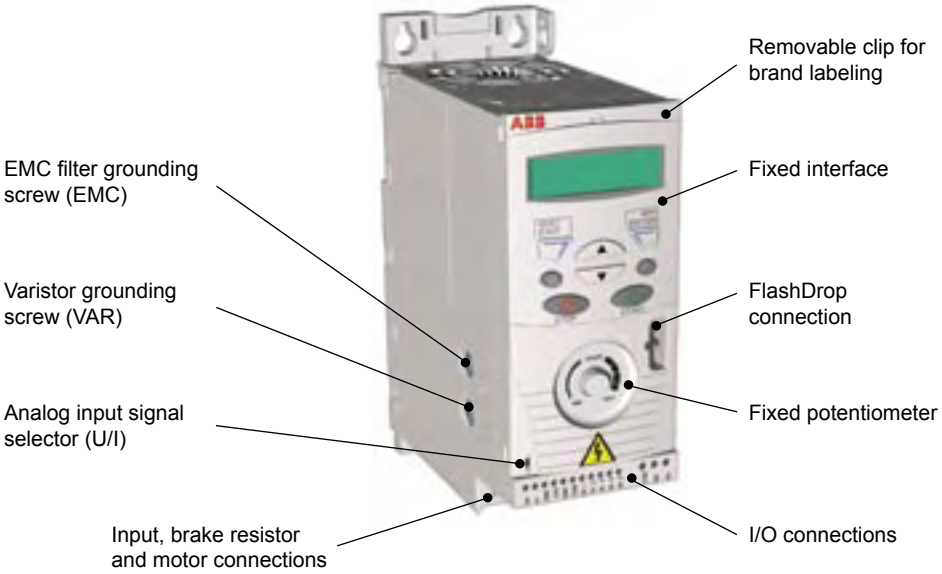
Interface

ACS150	-	01U	-	02A4	-	2



Options

Flashdrop

FlashDrop is a powerful palm sized tool for fast and easy parameter selecting and setting. This tool can be used to download parameters to a drive in as little as two seconds. Using this tool it is also possible to hide selected parameters to protect the machine. Only the parameters needed in the application are shown. FlashDrop does not require the drive to be powered. The drives shipping container is also designed to allow use of the FlashDrop tool without removing the drive.

NEMA 1 kit

The NEMA 1 kit MUL1-R1 includes a conduit box and hood for protection against dirt and dust. The MUL1-R1 covers all ACS150 frame sizes.

FlashDrop

ACS150 with MUL1-R1 NEMA 1 kit

Options

Brake resistors

All ACS150 drives are configured with a built-in brake chopper capable of 100% braking. By connecting an external resistor you can enable the dynamic braking function. The minimum and maximum resistance and the required power is show in the table. Ensure the resistor purchased does not exceed the maximum resistance nor is smaller than the minimum resistance. For more information about the selection of brake resistors, see the ACS150 User's Manual.

Selection table

Type code	Frame size	R_{min} ohm	R_{max} ohm	P_{BRmax} hp	P_{BRmax} kW
1-phase supply voltage 200 - 240 V units					
ACS150-01U-02A4-1	R0	70	390	0.5	0.37
ACS150-01U-04A7-1	R1	40	200	1	0.75
ACS150-01U-06A7-1	R1	40	130	1.5	1.1
ACS150-01U-07A5-1	R2	30	100	2	1.5
ACS150-01U-09A8-1	R2	30	70	3	2.2
3-phase supply voltage 200 - 240 V units					
ACS150-03U-02A4-2	R0	70	390	0.5	0.37
ACS150-03U-03A5-2	R0	70	260	0.75	0.55
ACS150-03U-04A7-2	R1	40	200	1	0.75
ASC150-03U-06A7-2	R1	40	130	1.5	1.1
ACS150-03U-07A5-2	R1	30	100	2	1.5
ACS150-03U-09A8-2	R2	30	70	3	2.2
3-phase supply voltage 380 - 480 V units					
ACS150-03U-01A2-4	R0	310	1180	0.5	0.37
ACS150-03U-01A9-4	R0	230	800	0.75	0.55
ACS150-03U-02A4-4	R0	210	500	1	0.75
ACS150-03U-03A3-4	R1	150	400	1.5	1.1
ACS150-03U-04A1-4	R1	130	300	2	1.5
ACS150-03U-05A6-4	R1	100	200	3	2.2
ACS150-03U-08A8-4	R1	70	110	5	4

Technical data

Cooling

The ACS150 is configured with cooling fans as standard. The cooling air must be free from corrosive materials and must not be above the maximum ambient temperature of 40°C (50°C with derating). For more specific limits see the Technical specification - Environmental limits in this catalog.

Cooling air flow

Type code	Frame size	Heat dissipation W	Heat dissipation BTU/Hr	Air flow m^3/h	Air flow ft^3/min
1-phase supply voltage 200 - 240 V units					
ACS150-01U-02A4-2	R0	25	85	-*)	-*)
ACS150-01U-04A7-2	R1	46	157	24	14
ACS150-01U-06A7-2	R1	71	242	24	14
ACS150-01U-07A5-2	R2	73	249	21	12
ACS150-01U-09A8-2	R2	96	328	21	12
3-phase supply voltage 200 - 240 V units					
ACS150-03U-02A4-2	R0	19	65	-*)	-*)
ACS150-03U-03A5-2	R0	31	106	-*)	-*)
ACS150-03U-04A7-2	R1	38	130	24	14
ASC150-03U-06A7-2	R1	60	205	24	14
ACS150-03U-07A5-2	R1	62	212	21	12
ACS150-03U-09A8-2	R2	83	283	21	12
3-phase supply voltage 380 - 480 V units					
ACS150-03U-01A2-4	R0	11	38	-*)	-*)
ACS150-03U-01A9-4	R0	16	55	-*)	-*)
ACS150-03U-02A4-4	R0	21	72	-*)	-*)
ACS150-03U-03A3-4	R1	31	106	13	8
ACS150-03U-04A1-4	R1	40	137	13	8
ACS150-03U-05A6-4	R1	61	208	19	11
ACS150-03U-08A8-4	R1	94	321	24	14

*) Frame size R0 with free convection cooling.

Free space requirements

Enclosure type	Space above mm/in	Space below mm/in	Space on left/right mm/in
All frame sizes	80/3.15	80/3.15	0/0

Fuses

Standard semi-conductor fuses can be used with the ACS150. Recommended fuse ratings are show in the table below.

Selection table

Type code	Frame size	IEC Fuses A	IEC Fuses Fuse type*)	UL Fuses A	UL Fuses Fuse type*)
1-phase supply voltage 200 - 240 V units					
ACS150-01U-02A4-2	R0	10	gG	10	UL class T
ACS150-01U-04A7-2	R1	16	gG	20	UL class T
ACS150-01U-06A7-2	R1	20	gG	25	UL class T
ACS150-01U-07A5-2	R2	25	gG	30	UL class T
ACS150-01U-09A8-2	R2	35	gG	35	UL class T
3-phase supply voltage 200 - 240 V units					
ACS150-03U-02A4-2	R0	10	gG	10	UL class T
ACS150-03U-03A5-2	R0	10	gG	10	UL class T
ACS150-03U-04A7-2	R1	10	gG	15	UL class T
ASC150-03U-06A7-2	R1	16	gG	15	UL class T
ACS150-03U-07A5-2	R1	16	gG	15	UL class T
ACS150-03U-09A8-2	R2	16	gG	20	UL class T
3-phase supply voltage 380 - 480 V units					
ACS150-03U-01A2-4	R0	10	gG	10	UL class T
ACS150-03U-01A9-4	R0	10	gG	10	UL class T
ACS150-03U-02A4-4	R0	10	gG	10	UL class T
ACS150-03U-03A3-4	R1	10	gG	10	UL class T
ACS150-03U-04A1-4	R1	16	gG	15	UL class T
ACS150-03U-05A6-4	R1	16	gG	15	UL class T
ACS150-03U-08A8-4	R1	20	gG	25	UL class T

*) According to IEC-60269 standard.

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Control Connections

These connections are show as examples only. Please refer to the ACS150 User's Manual for more detailed information.

Default I/O connections

X1A

1	SCR	Signal cable shield (screen)
2	AI	**Frequency reference:** 0...10V
3	GND	Analog input circuit common
4	+24V	Auxiliary voltage output: +24 VDC, max. 200 mA
5	GND	Auxiliary voltage output common
6	DCOM	Digital input common
7	DI1	**Stop(0) / Start (1)**
8	DI2	**Forward(0) / Reverse (1)**
9	DI3	**Constant speed selection** [1]
10	DI4	**Constant speed selection** [1]
11	DI5	**Acceleration and deceleration selection** [2]

X1B

12	COM	Relay output
13	NC	**No fault [Fault (-1)]**
14	NO	

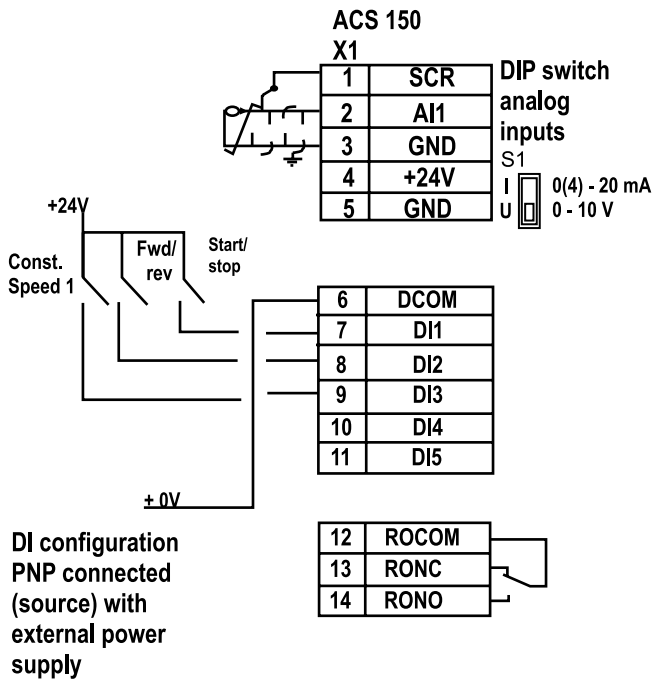

ABB Product Family

ACS50, ACS150, ACS350 and ACS550 AC Drive Families

Includes the ACS50, ACS150, ACS350 and ACS550 AC drives, covering sizes from ¼ hp to 550 hp and voltages from 110 to 600 V.

ACS800 AC Drive Family

The ACS800 product family includes Single drives, Multi-Drives, Regenerative AC drives, and Ultra Low Harmonic drives in ratings from 0.75 hp to 3,000 hp and voltages from 230 to 690 V.

Medium Voltage Drives

ABB's highly reliable ACS1000 is available from 400 hp to 6,700 hp and voltages of 2.3, 3.3, and 4.16 kV.

DCS 400 and DCS 500 DC Drive Families

DCS 400 and DCS 500 DC Drives are available from 5 hp to 10,000 hp and voltages from 230 to 1,190 V.

Low Voltage AC, DC and Medium Voltage AC Motors

Low-voltage AC motors from ABB range from ¼ hp to 800 hp and voltages from 208 to 480 V. A wide range of medium-voltage AC and low-voltage DC motors are also available.

ABB Control

ABB provides the widest range of low voltage products and systems. Our broad product lines include high-quality solutions for industrial controls, circuit protection devices, starters & soft-starters, automation, and wire management & connection systems.

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